## REMARKS

Claims 1, 3-6, 8, 9, 11-14, and 16 are presently pending in the application. Various claims have been amended to more particularly define the invention. Claims 2, 7, 10, and 15 have been cancelled in the interest of expediting prosecution.

It is noted that Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-16 stand rejected under 35 USC §112, first paragraph, as allegedly failing the enablement and best mode requirements. Claims 1-16 stand rejected under 35 USC §112, second paragraph, as lacking antecedent basis for "other section."

Claims 1-16 stand rejected either under 35 USC §102(b) as being anticipated by US Patent 5,592,581 to Okase or, alternatively, under 35 USC §103(a) as unpatentable over Okase.

Applicants respectfully disagree.

### THE CLAIMED INVENTION

As described in, for example independent claims 1 and 9, the present invention is directed to a semiconductor film formation device. A heater is disposed outside of a reaction vessel and close to a substrate mount site. A cooling device is disposed outside of the reaction vessel and opposite to the heater to control an internal temperature of the reaction vessel. A thermal conductivity adjusting member is disposed between the reaction vessel and the cooling device. The thermal conductivity adjusting member includes a first section with a thermal conductivity different from a section other than the first section along the gas flow path to lower a thermal diffusion effect of the source gas in the first section.

In another aspect of the present invention, a semiconductor film formation device as described in, for example claims 6 and 14, includes a heater that is disposed outside of a reaction vessel and close to a substrate mount site. A cooling device is disposed outside of the reaction vessel and opposite to the heater to control an internal temperature of the reaction

vessel. The reaction vessel includes a first section with a wall thickness smaller than a section other than the first section to form an interspace between the reaction vessel and the cooling device to lower a thermal diffusion effect of the source gas in the first section.

**THE REJECTIONS UNDER 35 USC §112**

The Examiner alleges that the "temperature control means" is neither enabled nor has the best mode been provided. Applicants respectfully disagree on both allegations but believe that the above claim amendments address the Examiner's concerns. Applicants also believe that the above claim amendments address the antecedent basis problem pointed out by the Examiner.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw these rejections.

**THE PRIOR ART REJECTION**

The Examiner alleges that Okase either teaches or renders obvious the present invention defined by claims 1-16.

However, Applicants submit that Okase fails to teach or suggest a heater and a cooling device that are disposed as recited in the amended claims 1, 6, 9 and 14. Rather, in Okase, a heater (76; FIG.7) is disposed on the same side as a cooling device (75; FIG.7) outside of the reaction vessel.

Furthermore, Okase fails to teach or suggest a thermal conductivity adjusting member or a first section of the reactor vessel that is formed to lower a thermal diffusion effect of the source gas in the first section, as recited in claims 1, 6, 9 and 14.

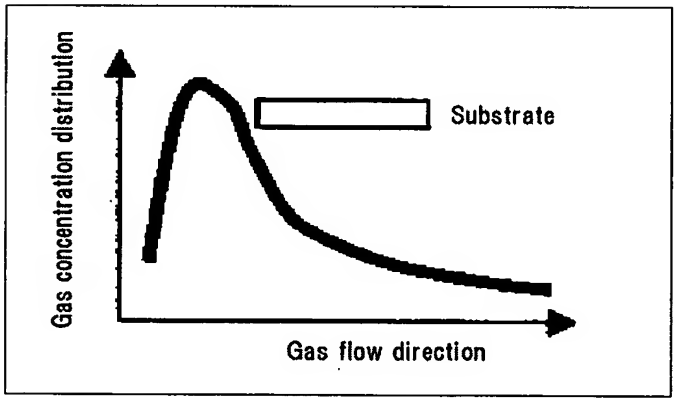
Therefore, Applicants submit that there is at least one significant difference between the invention and Okase.

Okase aims at heat treating a workpiece with an equal temperature distribution on the entire surface of the workpiece by its heat treatment apparatus (col.1, line 61 to col.2, line 2).

In contrast, the present invention aims at changing the source gas distribution by controlling the thermal diffusion effect of the source gas in a specific section so as to form a semiconductor film with an excellent evenness in thickness and composition ratio on a substrate. In other words, the invention does not always concentrate on the equal temperature distribution on the entire surface, as is the purpose of Okase.

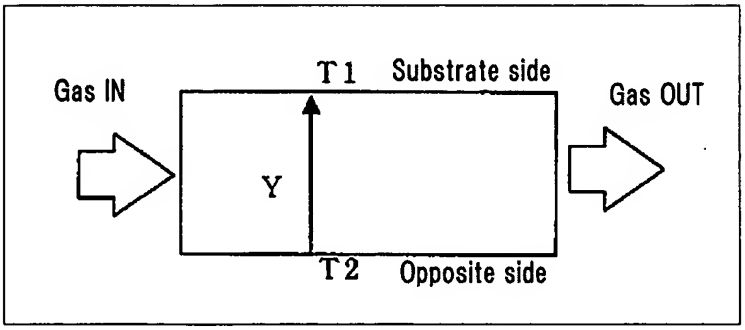
The concept of the invention is explained as follows.

In a typical CVD (or MOVPE) apparatus, a source gas is reacted and deposited on the way (e.g., inner walls or opposite surface to a substrate) to a substrate along the gas flow direction. Thus, the source gas begins to be consumed gradually from the upstream (or inlet of the reactor vessel) and thereby a gas concentration distribution as shown below is generated necessarily along the gas flow direction.

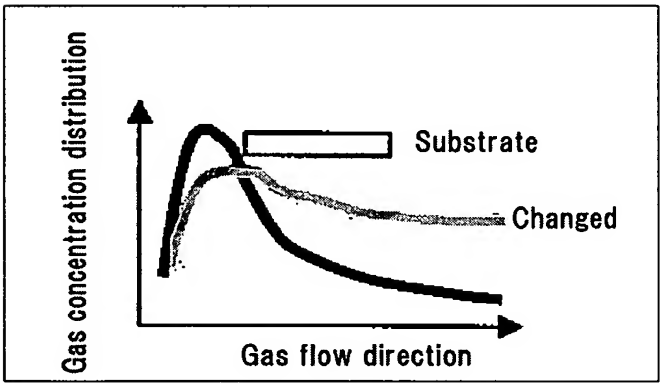



Such a gas concentration distribution results in an uneven thickness and composition ratio.

In the invention, the gas concentration distribution in Y direction as shown below can be improved by controlling the thermal diffusion effect based on a temperature difference (T1-T2) between substrate temperature (T1) and opposite surface temperature (T2).




Namely, T2 can be changed by controlling the thickness or material of the opposite surface. Then, the thermal diffusion effect varies based on the temperature difference (T1-T2). As a result, the gas concentration distribution can be improved as shown below (with a light-colored curve).




As explained above, in the invention, the gas flow distribution can be controlled by changing the opposite surface temperature without controlling the surface temperature of substrate, as in Okase.

Hence, turning to the clear language of the claims, in Okase there is no teaching or suggestion of: "... a heater that is disposed outside of the reaction vessel and close to the substrate mount site; a cooling device that is disposed outside of the reaction vessel and opposite to the heater to control an internal temperature of the reaction vessel; and a thermal conductivity adjusting member that is disposed between the reaction vessel and the cooling device, wherein the thermal conductivity adjusting member comprises a first section with a

thermal conductivity different from a section other than the first section along the gas flow path to lower a thermal diffusion effect of the source gas in the first section", as required by independent claim 1.

The remaining independent claims have similar concepts.

**CONCLUSION**

In view of the foregoing, Applicant submits that claims 1, 3-6, 8, 9, 11-14, and 16, all the claims presently pending in the application, are patentably distinct over the prior art of record and are allowable, and that the application is in condition for allowance. Such action would be appreciated.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned attorney at the local telephone number listed below to discuss any other changes deemed necessary for allowance in a telephonic or personal interview.

To the extent necessary, Applicant petitions for an extension of time under 37 CFR §1.136. The Commissioner is authorized to charge any deficiency in fees, including extension of time fees, or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

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Frederick E. Cooperrider
Registration No. 36,769

**MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC**
8321 Old Courthouse Road, Suite 200
Vienna, VA 22182-3817
(703) 761-4100
**Customer No. 21254**